CLAIMS

We claim:

1. A method for use in allocating subcarriers in an OFDMA system comprising

allocating at least one diversity cluster of subcarriers to a first subscriber; and

allocating at least one coherence cluster to a second subscriber.

2. The method defined in Claim 1 wherein the first subscriber comprises a mobile subscriber and the second subscriber comprises a fixed subscriber.

3. The method defined in Claim 1 wherein the first subscriber comprises a fixed subscriber located at a cell edge.

4. The method defined in Claim 1 further comprising transmitting information using one diversity cluster while performing frequency hopping.

5. The method defined in Claim 1 wherein using one diversity cluster includes channel coding across subcarriers of the one diversity cluster.

6. The method defined in Claim 1 further comprising transmitting codewords in which each codeword contains bits transmitted from multiple subcarriers and with difference bits between codewords being distributed among multiple subcarriers.

7. The method defined in Claim 1 wherein subcarriers of one coherence cluster are within the coherent bandwidth of a channel between a base station and a subscriber.

8. The method defined in Claim 1 further comprising updating allocation of clusters to the subscriber.

9. The method defined in Claim 1 further comprising reconfiguring cluster classification when population of mobile and fixed subscribers in a cell changes.

10. The method defined in Claim 1 wherein the at least one diversity cluster is configured to reduce the effect of inter-cell interference.

11. A method for use in allocating subcarriers in an OFDMA system comprising

determining whether a subscriber is mobile or fixed;

allocating at least one diversity cluster of subcarriers to the subscriber if the subscriber is determined to be mobile; and

allocating at least one coherence cluster of subcarriers to the subscriber if the subscriber is determined to be fixed.

12. The method defined in Claim 11 wherein determining whether a subscriber is mobile or fixed comprises detecting a rate of change of pilot signals and indicating a subscriber is mobile when the rate of change is greater than a predetermined amount.

13. The method defined in Claim 11 wherein determining whether a subscriber is mobile or fixed comprises measuring channel variation periodically.

14. The method defined in Claim 11 wherein determining whether a subscriber is mobile or fixed comprises measuring channel variation periodically for each cluster.

15. The method defined in Claim 11 wherein determining whether a subscriber is mobile or fixed comprises measuring SINR values periodically for each cluster.

16. The method defined in Claim 11 wherein determining whether a subscriber is mobile or fixed comprises measuring a power difference between pilot symbols for each cluster and averaging the difference over a window of time slots.

17. The method defined in Claim 16 wherein the window of time slots comprises a moving window of time slots.

18. The method defined in Claim 17 wherein the window of time slots comprises four time slots.

19. The method defined in Claim 11 further comprising transmitting information using one diversity cluster while performing frequency hopping.

20. The method defined in Claim 11 wherein using one diversity cluster includes channel coding across subcarriers of the one diversity cluster.

21. The method defined in Claim 11 further comprising transmitting codewords in which each codeword contains bits transmitted from multiple subcarriers and with difference bits between codewords being distributed among multiple subcarriers.

22. The method defined in Claim 11 wherein subcarriers of one coherence cluster are within the coherent bandwidth of a channel between a base station and a subscriber.

23. The method defined in Claim 11 further comprising updating allocation of clusters to the subscriber.

24. The method defined in Claim 11 further comprising reconfiguring cluster classification when population of mobile and fixed subscribers in a cell changes.

25. The method defined in Claim 11 wherein the at least one diversity cluster is configured to reduce an effect of inter-cell interference.

26. An apparatus comprising:

a subscriber;

a base station including a subcarrier allocator, the base station being communicatively coupled to the subscriber;

a variation detector to detect channel variation, wherein the subcarrier allocator allocates either one or more diversity clusters of subcarriers or one or more coherence clusters of subcarriers to the subscriber based on results of channel variation detection by the variation detector.

27. The apparatus defined in Claim 26 wherein the variation detector is located at the base station.

28. The apparatus defined in Claim 26 wherein the variation detector is located at the subscriber.

29. The apparatus defined in Claim 26 wherein the variation detector measures channel variation periodically for each cluster.

30. The apparatus defined in Claim 26 wherein the variation detector measures SINR values periodically for each cluster.

31. The apparatus defined in Claim 26 wherein the variation detector measures a power difference between pilot symbols for each cluster and average the difference over a window of time slots.

32. The apparatus defined in Claim 31 wherein the window of time slots comprises a moving window of time slots.

33. The apparatus defined in Claim 32 wherein the window of time slots comprises four time slots.

34. An apparatus for use in allocating subcarriers in an OFDMA system, the apparatus comprising

means for determining whether a subscriber is mobile or fixed;

means for allocating at least one diversity cluster of subcarriers to the subscriber if the subscriber is determined to be mobile; and

means for allocating at least one coherence cluster of subcarriers to the subscriber if the subscriber is determined to be fixed.

35. The apparatus defined in Claim 34 wherein the means for determining whether a subscriber is mobile or fixed comprises means for detecting a rate of change of pilot signals and indicating a subscriber is mobile when the rate of change is greater than a predetermined amount.

36. The apparatus defined in Claim 34 wherein the means for determining whether a subscriber is mobile or fixed comprises means for measuring channel variation periodically for each cluster.

37. The apparatus defined in Claim 34 wherein the means for determining whether a subscriber is mobile or fixed comprises means for measuring SINR values periodically for each cluster.

38. The apparatus defined in Claim 34 wherein the means for determining whether a subscriber is mobile or fixed comprises means for measuring a power difference between pilot symbols for each cluster and averaging the difference over a window of time slots.

39. The apparatus defined in Claim 38 wherein the window of time slots comprises a moving window of time slots.

40. The apparatus defined in Claim 39 wherein the window of time slots comprises four time slots.

41. The apparatus defined in Claim 34 further comprising means for transmitting information using one diversity cluster while performing frequency hopping.

42. The apparatus defined in Claim 11 wherein using one diversity cluster includes channel coding across subcarriers of the one diversity cluster.

43. The apparatus defined in Claim 11 further comprising means for transmitting codewords in which each codeword contains bits transmitted from multiple subcarriers and with difference bits between codewords being distributed among multiple subcarriers.

44. The apparatus defined in Claim 34 wherein subcarriers of one coherence cluster are within the coherent bandwidth of a channel between a base station and a subscriber.

45. The apparatus defined in Claim 11 further comprising means for updating allocation of clusters to the subscriber.

46. The apparatus defined in Claim 34 further comprising means for reconfiguring cluster classification when population of mobile and fixed subscribers in a cell changes.

47. The apparatus defined in Claim 34 wherein the at least one diversity cluster is configured to reduce an effect of inter-cell interference.